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The correct name in *Oenothera* for *Gaura drummondii* (Onagraceae)

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Abstract

In 2007, Wagner and Hoch proposed the new name *Oenothera xenogaura* W.L.Wagner & Hoch for the species then known as *Gaura drummondii* (Spach) Torrey & A. Gray (non *O. drummondii* Hooker, 1834). However, the authors overlooked the availability of *Gaura hispida* Bentham (1840) for this species. Accordingly, we herewith make the appropriate new combination for this species, *O. hispida* (Bentham) W.L.Wagner, Hoch & Zarucchi, and place *O. xenogaura* in synonymy.

Keywords

Gaura drummondii, *Gaura hispida*, *Oenothera hispida*, *Oenothera xenogaura*, nomenclature

Introduction

The only member of *Oenothera* sect. *Gaura* subsect. *Xenogaura* is a distinctive allopolyploid species that occurs from eastern Texas south through Mexico as far south as Oaxaca. When the genus *Gaura* L. is recognized, the correct name for this species is *G. drummondii* (Spach) Torrey & A. Gray, which was used in the revision of the group by Raven and Gregory (1972). Since that time, molecular studies (Hoggard et al. 2004; Levin et al. 2004; Ford and Gottlieb 2007) have shown that *Oenothera* is strongly supported as monophyletic only with the inclusion of *Calylophus* Spach, *Gaura*, and *Stenosiphon* Spach. These four groups also have in common a stigma that either is

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peltate to discoid, or is deeply to shallowly 4-lobed and then subtended by a more or less conspicuous peltate indusium. These data led Wagner et al. (2007) to broaden the concept of *Oenothera* by including within it *Calylophus*, *Gaura*, and *Stenosiphon*. The new name *Oenothera xenogaura* W.L.Wagner & Hoch was proposed in 2007 for this species when *G. drummondii* was transferred to *Oenothera* because use of *G. drummondii* is blocked by *O. drummondii* Hooker of sect. *Oenothera*. Within the protologue of their new combination, Wagner and Hoch did not cite any other taxonomic synonym. However, at that time, they failed to take into account *G. hispida* Bentham (1840), one of the synonyms included for *G. drummondii* by Raven and Gregory (1972). Thus, they missed the opportunity of transferring *G. hispida* to *Oenothera* and making the new combination. We herewith correct the mistake and make the appropriate new combination namely *O. hispida* W.L.Wagner, Hoch & Zarucchi. Additionally, along with other synonyms cited by Raven and Gregory, *O. xenogaura*, a legitimate replacement name, is here placed into synonymy. Since Wagner and Hoch did not cite any taxonomic synonym, their Ô. *xenogaura* was not superfluous when published [Art. 52.1; McNeill et al. 2012].

Taxonomic part

Oenothera hispida **(Bentham) W.L.Wagner, Hoch & Zarucchi, comb. nov.**

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Fig. 1

Basionym. *Gaura hispida* Bentham, Pl. Hartw. 288. 1840.

Type. Mexico: In fields near Leon, Guanajuato, June 1837, *Thomas Hartweg 1603* (Holotype: K! [Kew image]; Isotypes: BM, CAMB, G, LD!).

Schizocarya drummondii Spach, Nouv. Ann. Mus.Hist. Nat. 4: 382. 1836 ["1835"]. *Gaura drummondii* (Spach) Torrey & A. Gray, Fl. N. Amer. 1: 519. 1838. *Oenothera xenogaura* W.L.Wagner & Hoch, Syst. Bot. Monogr. 83: 213. 2007.

Type. U.S.A. Texas: Travis Co., Austin, 1833–1834, *T. Drummond III.36* (Holotype: G; isotypes: BM!, GH!, NY!, P). Note: the BM isotype is mounted on a sheet with two non-type collections of the same species: Purpus 3387 and Purpus 5383.

Gaura roemeriana Scheele, Linnaea 21: 579. 1848.

Type. U.S.A. Texas: Comal Co., New Braunfels, 1846, *Ferdinand Roemer s.n.* (Lectotype: MO-1833107!, here designated; Isolectotypes: CAS, HAL). The holotype at B was destroyed in World War II.

Schizocarya crispa Spach, Nouv. Ann. Mus. Paris 4: 384. 1835. *Gaura crispa* (Spach) D.Dietr., Syn. PI. 2: 1298. 1840.

Type. Mexico: Tamaulipas, Matamoros, April 1831, *J. L. Berlandier 2313* (Holotype: G; Isotypes: BM, K, P).

Plant rhizomatous, perennial, forming extensive colonies, strigillose and often also villous. Stems 20–60(-120) cm tall, sometimes strict with a single unbranched main

Figure 1. *Oenothera hispida* (Bentham) W.L.Wagner, Hoch & Zarucchi **A** Habit, Mexico, Nuevo León, *Roybal 34* (US) **B** Flower, lateral view, *Roybal 34* (US) **C** Flower, face view, digital image (Ray Pistrum as "Gaura drummondii fresh flower" [http://redsgoodvsevilcowbarn.blogspot.com/2012/06/chigger-chow-and-gaura-drummondii.html]) **D** Base of staminal filaments showing basal scales, *Roybal 34* (US) **E** Capsule, Texas, Hall 213 (US) **F** *Oenothera suffrutescens* (Ser.) W.L.Wagner & Hoch capsule, New Mexico, *Standley 6481* (US).

stem but usually somewhat decumbent with several branches from the base and usually irregular branching above. Leaves in a basal rosette and cauline, 0.5–7.5 (-9.5) × 0.1–2.2 cm; subsessile; blade narrowly lanceolate to elliptic, margin subentire to shallowly sinuate-dentate. Inflorescence a spike. Flowers 4-merous, zygomorphic, opening near sunset; floral tube 4–14 mm; sepals 7–11(-14) mm; petals white, fading red, 6-10 mm; staminal filaments 4–8.5 mm, anthers 3-6 mm; style 12–26 mm. Capsule 7–13 × 3–5 mm, erect, the body ellipsoid or ovoid, 4-angled, distal half pyramidal, the base of the pyramidal portion distinctly bulging, then immediately and sharply constricted to the terete proximal part. Seeds (2-)3-4(-8), 2–2.5 × 1–1.25 mm, ovoid, usually flattened on one or several sides by crowding in the fruit, reddish brown. 2n = 28.

Phenology and distribution. Flowering from May through July, but sporadically as late as November. *Oenothera hispida* grows in sandy loam soils from the eastern half of Texas south through Mexico as far south Oaxaca. It is naturalized in Arkansas (Sevier Co.), coastal southern California, Georgia (Glynn Co.); its current status in both Arkansas and Georgia should be verified. It is considered an invasive species in California.

Oenothera hispida is the sole member of *Oenothera* sect. *Gaura* subsection *Xenogaura*. Raven and Gregory (1972) suggested that *O. hispida* arose following interspecific hybridization between *O. suffrutescens* (Ser.) W.L.Wagner & Hoch (subsect. *Campogaura* (P. H. Raven & D. P. Gregory) W.L.Wagner & Hoch) and a species in subsect. *Stipogaura* (P. H. Raven & D. P. Gregory) W.L.Wagner & Hoch, possibly near *O. mckelveyae* (Munz) W.L.Wagner & Hoch. Hoggard et al. (2004) found that the pistillate parent of *O. hispida* was indeed *O. mckelveyae* or a close relative, but that the staminate parent probably came from a lineage related to *O. dodgeniana* Krakos & W.L.Wagner or *O. lindheimeri* (Engelm. & A.Gray) W.L.Wagner & Hoch in subsect. *Gaura* (L.) W.L.Wagner & Hoch. *Oenothera hispida* is not easily distinguished morphologically from *O. suffrutescens* (subsect. *Campogaura*), with which it shares the character of a thick stipe, and occasionally hydridizes in Texas. *Oenothera hispida* is an aggressively rhizomatous perennial with fruits conspicuously bulging on the distal half (Raven and Gregory 1972). Since *O. hispida* and *O. suffrutescens* can be difficult to distinguish we have included a capsule of the latter in the figure (Fig. 1-F) for comparison of key features for correct separation of the two species. The rhizomatous habit makes this species potentially invasive, despite its self-incompatibility, but so far it has established itself most aggressively only in coastal southern California (Wagner et al. 2007). There are no other Hartweg collections of this species that anyone has seen other than the one cited above as the type collection. We have seen the holotype as an image on the Kew web site that was mistakenly filed under *G. coccinea* Pursh. The label information corresponds to the published locality given and is marked as in the Bentham herbarium.

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